Jan. 9, 1923. 1,441,326

S. J. BLOCKER.
RADIATOR CAP.
FILED NOV. 30, 1921.

Fig. 1.

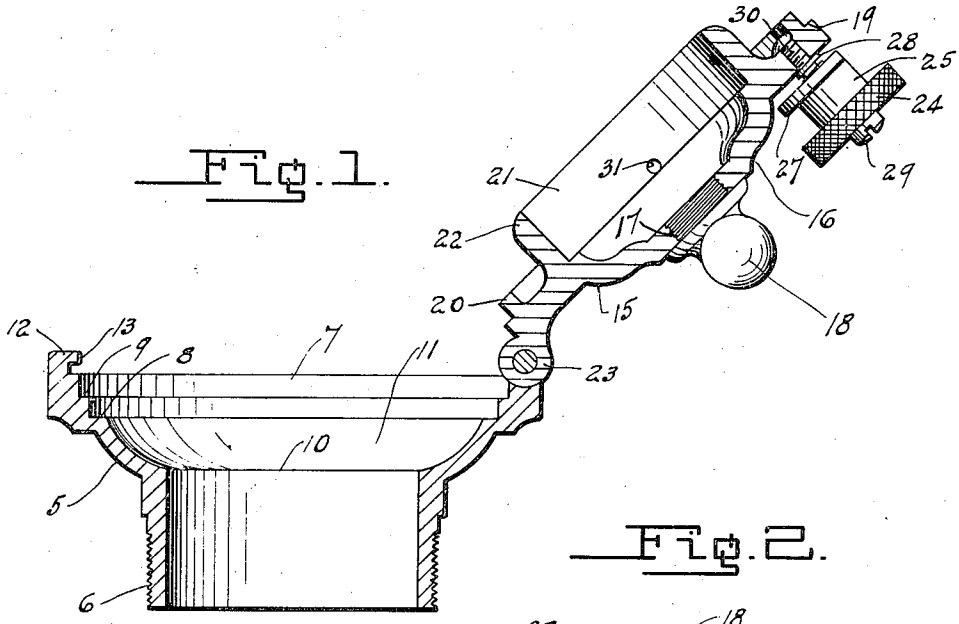
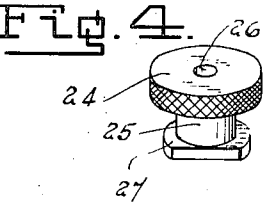
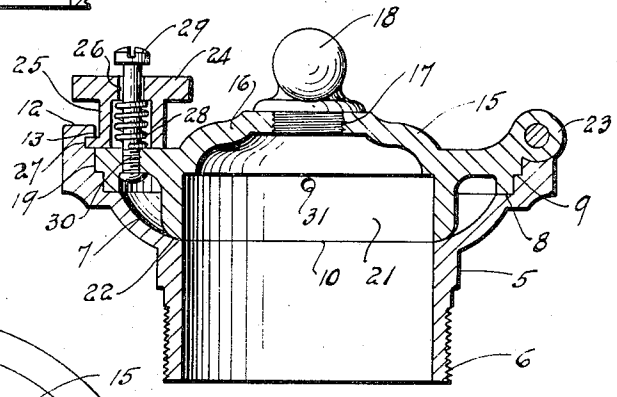


Fig. 2.

Fig. 4.





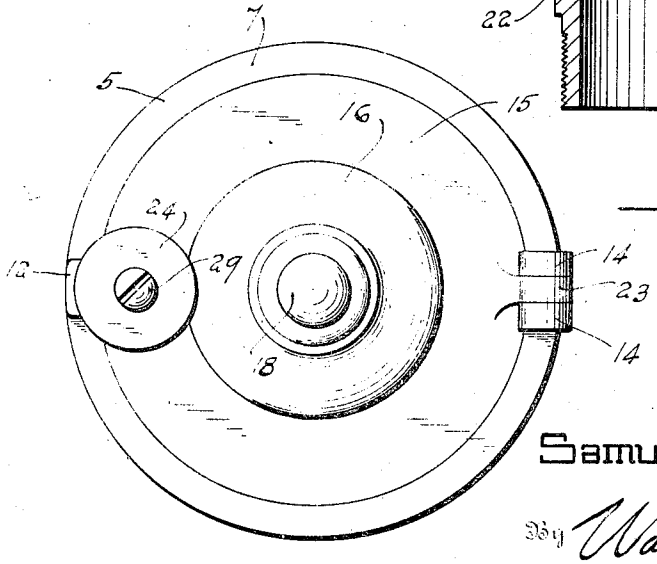


Fig. 3.

Inventor
Samuel J. Blocker
By Watson E. Coleman
Attorney

Patented Jan. 9, 1923. 1,441,326

UNITED STATES PATENT OFFICE.

SAMUEL J. BLOCKER, OF MEXIA, TEXAS.

RADIATOR CAP.

Application filed November 30, 1921. Serial No. 518,906.

To all whom it may concern:

Be it known that I, SAMUEL J. BLOCKER, a citizen of the United States, residing at Mexia, in the county of Limestone and State of Texas, have invented certain new and useful Improvements in Radiator Caps, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to closure members, and particularly to a closure member for the inlet of an automobile radiator.

The usual screw-cap now used on the radiators of automobiles has been found unsatisfactory for the reason that the cap becomes hot, thereby rendering the same difficult and cumbersome to manage, and slow and often hard to unscrew. If the cap is screwed down tight, it is exceedingly hard to remove and very uncomfortable after it has been heated by the steam within the radiator and often requiring the use of a tool. On the other hand, if the cap is loose, there is danger of the same being disengaged from the radiator by the motion of the automobile in its course of travel causing loss of the cap.

It is, therefore, an object of the invention to provide a radiator cap which does not have to be rotated in order to screw the cap to the radiator and which is capable of being swung vertically for instantly closing or opening the inlet of the radiator without requiring the cap to be disengaged from the mouth or neck of the inlet.

It is another object of the invention to provide a cap of this character which is hinged to the mouth or inlet member of the radiator and provided with means for effecting a double closing of the inlet by a novel flange arrangement so that splashing or escape of the water from beneath the edges of the cap is prevented.

It is also an object of the invention to provide a radiator cap of this character which is hinged at one point to the mouth of inlet member of the radiator and provided at a diametrically opposite point with a rotatable fastening member which need only be rotated a half of a revolution in order to lock the cap to the mouth.

It is still a further object of the invention to provide a radiator cap of this character wherein the novel fastening member is constantly urged away from the cap through the medium of a spring which tends to urge the member into engagement with a keeper carried by the mouth or inlet of the radiator.

With these and other objects in view, the invention consists in the improved construction and arrangement of parts to be hereinafter more particularly described, fully claimed, and illustrated in the accompanying drawings, in which:—

Figure 1 is a sectional view of a radiator cap constructed in accordance with an embodiment of the invention, the cap being shown in its open position;

Figure 2 is a sectional view showing the cap in its closed and locked position;

Figure 3 is a top plan view of the structure shown in Figure 2; and

Figure 4 is a perspective view of the fastening means of the cap.

Referring to the drawings, 5 designates a tubular mouth or neck having its end portion 6 exteriorly threaded for connection to the radiator. It is of course obvious that this device may be used as an inlet for any form of tank so that its construction does not limit it for use on an automobile radiator. The upper end 7 of the tubular member is enlarged to substantially provide a bowl, said bowl having annular shoulders 8 and 9 provided therein in spaced relation to each other substantially in stepped formation and annularly of the bowl, the distance between the shoulder 8 and the lower edge 10 of the bowl being greater than the distance between the shoulders 8 and 9. It will be noted that the portion 11 of the bowl, or that portion disposed between the edge 10 and the shoulder 8, is substantially concavo-convex, the purpose of which will be hereinafter described. Projecting upwardly from the edge of the bowl of the tubular member 5 is a keeper 12, said keeper having a lip 13 which extends inwardly of the bowl and serves as a part of the fastening means of the cap. Projecting from the edge of the bowl diametrically opposite the keeper 12 is a pair of hinged knuckles 14, said knuckles projecting substantially from the upper edge of the bowl.

In connection with the tubular member 5, a cap 15 is employed, said cap including a dome 16 having a central threaded opening 17 adapted to receive a plug 18. The plug, if desired, may be removed and substituted by a motometer or emblems of various kinds to suit the taste of the owner of the auto-

mobile, or if desired, it may be removed to permit the escape of steam if such is necessary, without removing the cap. A flange 19 projects from the base of the dome 16 and annularly of said dome, said flange corresponding in diameter to the diameter of the upper portion of the bowl 7. Depending from the flange 19 and inwardly of the outer edge of the flange, is a supplemental flange 20, the lower face of the flange 20 being adapted to engage the shoulder 9, while the outer edge of the flange 19 is adapted to engage the inner face of the upper edge of the bowl to provide a water-tight connection. With this arrangement, the inner face of the supplemental flange 20 is disposed substantially flush with the portion 11 of the bowl. Formed integral with and depending from the flange 20 at the junction of said flange with the dome, is a collar or flange 21, said flange substantially corresponding in width to the depth of the bowl 7. The lower outer edge 22 of the flange 21 is rounded, while the extremity of the flange is intended to engage the edge 10 of the bowl. As shown in Figure 2, when the cap is disposed in its closed position, the flange 21 cooperates with the portion 11 of the bowl to provide an annular compartment, so that in case water or steam should pass between the flange 21 and the portion 10 of the bowl, a compartment will be provided for its reception, it being impossible for the water to pass beyond the shoulders 8 and 12 or the edge of the flange 19. In addition to this, when the cap is opened, the concave formation of the portion 11 serves as a funnel to direct water that may have entered the compartment back into the radiator.

Projecting from the outer edge of the flange 19, is a hinged knuckle 23 adapted to be disposed between the hinged knuckles 14 of the inlet member, a suitable pintle being used to pivotally connect the knuckle 23 with the knuckles 14 whereby the cap may be swung vertically to open and close the inlet.

In order to firmly lock the cap to the tubular member 5, there is provided novel fastening means comprising an actuating member or knob 24 from the lower face of which an extension or collar 25 projects, an opening 26 being provided in the knob 24, said opening being adapted to communicate with the interior of the collar or extension 25 and is considerably smaller in diameter than the diameter of the collar 25. Projecting from the lower edge of the extension 25 and extending substantially half-way around the extension is a lip 27, said lip being adapted to engage the lip 13 of the keeper 12 upon rotation of the knob to lock the cap. Disposed within the collar 25 is an expansion spring 28, while extending through the opening 26 is a screw 29, said screw being threaded in an opening 30 provided in the flange 19, the end of the screw being offset or beaded to prevent accidental disengagement. It will be noted that the length of the screw is greater than the length of the knob and collar 25 so as to permit the spring 28 to normally urge the knob or fastening means toward the head of the screw 29 thereby causing binding engagement of the lips 12 and 27 so that vibration of the engine of the automobile will not cause accidental rotation or unlocking of the lock fastening means. All that is necessary to remove the cap is to rotate the knob 24 a half of a revolution in either direction, or sufficient to permit disengagement of the lips 13 and 27 whereupon the cap may be instantly swung to one side to permit the admission of water.

An important feature of this device is that the upper portion of the bowl 7 of the tubular member substantially provides a funnel which greatly facilitates filling of the radiator and at the same time by the novel formation of the shoulders prevents splashing or escape of water, regardless of the fact that no threads are used to connect the cap to the tubular member. The flange 27 of the fastening member is not intended to snugly fit within the recess formed by the loop 13 and the upper end 7 of the tubular member, so that there is a small amount of play. In view of this, any steam that may accumulate within the cap will naturally urge the cap upwardly, thus permitting escape of steam from beneath the cap. Should water accumulate within the compartment formed by the cooperation of the flange 21 and the pawl, the same may be forced back into the radiator in view of the provision of an opening 31 in the flange 21, which permits the admission of steam into the compartment so that the water may be forced back into the radiator beneath the edge 22 of the flange 21. To apply the cap it is only necessary to swing the same inwardly of the bowl and rotate the knob and compressing the spring 28 so as to permit the lip 27 to engage the lower surface of the lip 13.

From the foregoing it will be readily seen that this invention provides a novel closure member capable of being used not only for radiators, but for all purposes requiring the use of an inlet of this character, the novel formation of the flanges of the cap positively preventing leakage or escape of liquid, while the bowl not only assists in this operation, but also provides means for directing water into the tubular member in the filling operation. All of these features are possessed by a device that may be readily applied, as all that is necessary is a threaded opening and in which the threaded end 6 of the tubular member may be inserted.

What is claimed is:—

1. A device of the character described comprising a tubular member having one

end thereof enlarged, a cap including a flange, said flange having a stepped outer edge adapted to engage shoulders formed interiorly of the enlarged end of the tubular member, a supplemental flange depending from the flange of the cap inwardly of the enlarged portion of the tubular member, said supplemental flange being adapted to engage the inner wall of the enlarged end of the tubular member and arranged to cooperate with the stepped edge of the first mentioned flange to provide an endless unobstructed passage for the reception of fluid when the cap is disposed in its closed position.

2. A device of the character described comprising a tubular member having one end thereof enlarged, a cap including a flange, said flange having a stepped outer edge adapted to engage shoulders formed interiorly of the enlarged end of the tubular member, a supplemental flange depending from the flange of the cap inwardly of the enlarged portion of the tubular member, said supplemental flange being adapted to engage the inner wall of the enlarged end of the tubular member and arranged to cooperate with the stepped edge of the first mentioned flange to prevent the escape of fluid when the cap is disposed in its closed position, said enlarged end of the tubular member providing a funnel when the cap is disposed in its open position.

3. A device of the character described comprising a tubular member having one end thereof enlarged, a cap hinged to said enlarged end, said cap having a pair of depending flanges adapted to engage the walls of the enlargement when the cap is disposed in its closed position, a keeper projecting from the enlarged end of the tubular member, and a fastening member rotatably mounted on the cap, said fastening member having a lip arranged to engage the keeper of the tubular member, and means for normally urging the lip of the fastening member into engagement with the keeper.

4. A device of the character described comprising a tubular member having one end thereof enlarged, a cap hinged to said enlarged end, said cap having a pair of depending flanges adapted to engage the walls of the enlargement when the cap is disposed in its closed position, a keeper projecting from the enlarged end of the tubular member, and a knob, said knob having a tubular extension, a lip carried by the outer face of said tubular extension, said lip being adapted to engage a keeper carried by the enlarged end of the tubular member, a pin or screw extending through said knob and the tubular extension, and a spring disposed within the tubular member and surrounding the pintle for normally urging the knob away from the cap.

In testimony whereof I hereunto affix my signature.

SAMUEL J. BLOCKER.